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[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-0598; Project Identifier AD-2021-01322-T]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 777-200, 777-200LR, 777-300, 777-300ER, and 777F series airplanes. This proposed AD was prompted by reports of wing anti-ice (WAI) valve failure that can result in undetected structural damage to leading edge (LE) slat assemblies, and separately a failure of the autothrottle (A/T) to disconnect after advancing the throttle levers, which caused a low speed condition during a go-around. This proposed AD was also prompted by a determination that insufficient low-speed protection exists in the 777 fleet and a determination that the flightcrew may not recognize and properly respond to a multi-channel unreliable airspeed event. This proposed AD would require installing certain new software, and doing a software configuration check. The FAA is proposing this AD to address the unsafe conditions on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

• Federal eRulemaking Portal: Go to https://www.regulations.gov. Follow the instructions for submitting comments.

• Fax: 202-493-2251.

• Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

• Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet https://www.myboeingfleet.com. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at https://www.regulations.gov by searching for and locating Docket No. FAA-2022-0598.

Examining the AD Docket

You may examine the AD docket at https://www.regulations.gov by searching for and locating Docket No. FAA-2022-0598; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Hassan Ibrahim, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3653; email: hassan.m.ibrahim@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include "Docket No. FAA-2022-0598; Project Identifier AD-2021-01322-T" at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to https://www.regulations.gov, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as "PROPIN." The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Hassan Ibrahim, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3653; email:

hassan.m.ibrahim@faa.gov. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA has received reports of WAI valve failure, and determined that a specific aspect of the WAI system was not fully assessed by the system safety analysis conducted during type certification. Fleet data indicates, the WAI valve has failed to open in 50 unique events during the period from November 2013 through March 2019. High temperature bleed air (250-400 °F) can unintentionally flow into the LE slat assemblies due to mechanical failure of the WAI valve or an unintended command from the airfoil and cowl ice protection system (ACIPS) control card. This high temperature bleed air exposure, when the airplane is on the ground and there is minimal airplane speed, can reduce the structural capability of the slat such that affected structure may not be able to withstand design limit load during the next flight cycle (takeoff or landing). The revised software will monitor WAI valve function and annunciate failures.

In addition, Boeing received a report that, during landing, after the A/T had automatically changed to the IDLE A/T mode, the pilot initiated a go-around by manually advancing the throttle levers to more than 50 degrees throttle lever angle. During that incident, the A/T did not disconnect due to advancing the throttle levers, and remained in IDLE mode with the throttle levers automatically returning to an idle setting when released, causing a low speed condition during the go-around. Such a low speed condition can result in a low altitude stall and potential impact with terrain.

Boeing developed new Airplane Information Management System 2 (AIMS-2) Block Point (BP) Version 17C software to address the WAI system failures and A/T not disengaging. Before operators can install AIMS-2 BP Version 17C software updates, if not done already, they must install earlier BP versions of this software to ensure all required software part numbers are installed. Those earlier versions were released to

address other unsafe conditions on the affected airplanes. One earlier software update was prompted by an accident at San Francisco International Airport on July 6, 2013 in which the airplane deviated below the intended glideslope and impacted the seawall as it crashed short of the runway. The subsequent investigation determined that insufficient low-speed protection existed in the 777 fleet; AIMS-2 BP Version 17B was developed to expand the A/T system authority and provide an earlier threshold for the low-airspeed alert. AIMS-2 BP V17B inadvertently introduced the failure of the A/T to disconnect after manual throttle advancement during go-around, which led to the subsequent development of AIMS-2 BP V17C. Another concern addressed by earlier software updates is the determination that inadequate flightcrew recognition of, and response to, a multi-channel unreliable airspeed event, can result in loss of control of the airplane.

These conditions, if not addressed, could result in undetected failure of the WAI system and consequent high temperature bleed air flowing into the LE slat assemblies, along with a low speed condition on the ground, which could result in reduced structural integrity of the slat and prevent continued safe flight and landing of the airplane. In addition, the FAA is also issuing this AD to prevent failure of the A/T to disconnect after advancing the throttle levers, or insufficient low energy protection, which could result in controlled flight into terrain, or a multi-channel unreliable airspeed event could result in loss of control of the airplane.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe conditions described previously are likely to exist or develop on other products of the same type design.

Related Service Information under 1 CFR Part 51

The FAA reviewed Boeing Alert Requirements Bulletin 777-31A0342 RB, dated July 19, 2021. This service information specifies procedures for installing new AIMS-2

BP Version 17C software, and doing a software configuration check. For Groups 1, 2, and 3, this service information also specifies concurrent actions (installation of AIMS-2 BP Version 17B software; installation of AIMS-2 and PlaneNet-2 systems; or installation of AIMS-2 and software; depending on configuration).

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

Proposed AD Requirements in this NPRM

This proposed AD would require accomplishing the actions specified in the service information already described, except for any differences identified as exceptions in the regulatory text of this proposed AD. For information on the procedures and compliance times, see this service information at https://www.regulations.gov by searching for and locating Docket No. FAA-2022-0598.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 353 airplanes of U.S. registry. The FAA estimates the following costs to comply with this proposed AD:

Estimated Costs*

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Install AIMS-2 BP Version 17C and do software check	3 work-hours X $85 per hour = $255	Up to $13,140	Up to $13,395	Up to $4,728,435
Install AIMS 2 BP Version 17B (SB 777-31-0294)	3 work-hours X $85 per hour = $255	Up to $13,140	Up to $13,395	Up to $4,728,435

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Install AIMS-2 and PlaneNet-2 (SB 777-31-0331)	Up to 101 work-hours X $85 per hour = Up to $8,585	Up to $13,140	Up to $21,725	Up to $7,668,925
Install AIMS 2 and software (SB 777-21-0322)	Up to 106 works-hours X $85 per hour = Up to $9,010	Up to $13,140	Up to $22,150	Up to $7,818,950

* This parts cost is estimated to be the same for the concurrent actions as for the primary actions but the FAA does not have any definitive data on which to base the parts cost.

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some or all of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected operators.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a

substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

(1) Is not a "significant regulatory action" under Executive Order 12866,

(2) Would not affect intrastate aviation in Alaska, and

(3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

The Boeing Company: Docket No. FAA-2022-0598; Project Identifier AD-2021-01322-T.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 777-200, 777-200LR, 777-300, 777-300ER, and 777F series airplanes, certificated in any category, as identified in Boeing Alert Requirements Bulletin 777-31A0342 RB, dated July 19, 2021.

(d) Subject

Air Transport Association (ATA) of America Code 31, Instruments.

(e) Unsafe Condition

This AD was prompted by reports of wing anti-ice (WAI) valve failure that can result in undetected structural damage to leading edge (LE) slat assemblies, and separately a failure of the autothrottle (A/T) to disconnect after advancing the throttle levers, which caused a low speed condition during a go-around. This AD was also prompted by a determination that insufficient low-speed protection exists in the 777 fleet and a determination that the flightcrew may not recognize and properly respond to a multi-channel unreliable airspeed event. The FAA is issuing this AD to prevent undetected failure of the WAI system and consequent high temperature bleed air flowing into the LE slat assemblies, along with a low speed condition on the ground, which could result in reduced structural integrity of the slat and prevent continued safe flight and landing of the airplane. The FAA is also issuing this AD to prevent failure of the A/T to disconnect after advancing the throttle levers, or insufficient low energy protection, which could result in controlled flight into terrain, or a multi-channel unreliable airspeed event could result in loss of control of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

Except as specified by paragraph (h) of this AD: At the applicable times specified in the “Compliance” paragraph of Boeing Alert Requirements Bulletin 777-31A0342 RB,

dated July 19, 2021, do all applicable actions identified in, and in accordance with, the Accomplishment Instructions of Boeing Alert Requirements Bulletin 777-31A0342 RB, dated July 19, 2021.

Note 1 to paragraph (g): Guidance for accomplishing the actions required by this AD can be found in Boeing Alert Service Bulletin 777-31A0342, dated July 19, 2021, which is referred to in Boeing Alert Requirements Bulletin 777-31A0342 RB, dated July 19, 2021.

(h) Exceptions to Service Information Specifications

(1) Where the Compliance Time columns of the tables in the "Compliance" paragraph of Boeing Alert Requirements Bulletin 777-31A0342 RB, dated July 19, 2021, use the phrase "the original issue date of Requirements Bulletin 777-31A0342 RB," this AD requires using "the effective date of this AD."

(2) Where Boeing Alert Requirements Bulletin 777-31A0342 RB specifies contacting Boeing for instructions for upgrading certain software: This AD requires doing the upgrade using a method approved in accordance with the procedures specified in paragraph (i) of this AD.

(3) Where the description in the Effectivity section of Boeing Alert Requirements Bulletin 777-31A0342 RB defines Group 1 airplanes as "Airplanes with Airplane Information Management System (AIMS)-2 with service bulletin 777-31-0294 incorporated," this AD requires using "Airplanes with Airplane Information Management System (AIMS)-2 with a requirement to incorporate service bulletin 777-31-0294."

(4) Where the description in the Effectivity section of Boeing Alert Requirements Bulletin 777-31A0342 RB defines Group 2 airplanes as "Airplanes with AIMS-2 with service bulletin 777-31-0331 incorporated," this AD requires using "Airplanes with AIMS-2 with a requirement to incorporate service bulletin 777-31-0331."

(5) Where the description in the Effectivity section of Boeing Alert Requirements Bulletin 777-31A0342 RB defines Group 3 airplanes as "Airplanes with AIMS-2 with service bulletin 777-31-0332 incorporated," this AD requires using "Airplanes with AIMS-2 with a requirement to incorporate service bulletin 777-31-0332."

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (j)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(j) Related Information

(1) For more information about this AD, contact Hassan Ibrahim, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3653; email: hassan.m.ibrahim@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet https://www.myboeingfleet.com. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

Issued on June 1, 2022.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,
Compliance & Airworthiness Division,
Aircraft Certification Service.
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